Cultural Differences in Perceiving and Processing Emotions: A Holistic Approach to Person Perception

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Abstract

East Asians tend towards holistic styles of thinking whereas Westerners generally think more analytically. Recent work has shown that Western participants perceive emotional expressions in a somewhat holistic manner, however. Specifically, Westerners interpret emotional facial expressions differently when presented with a body displaying a congruent versus incongruent emotional expression. Here, we examined how processing these face-body combinations varies according to cultural differences in thinking style. Consistent with their proclivity towards contextual focus, Japanese perceivers focused more on the body when judging the emotions of face-body composites. Moreover, in line with their greater tendency towards holistic perceptual processing, we found that pairing facial expressions of emotion with emotionally congruent bodies facilitated Japanese participants' recognition of faces' emotions to a greater degree than it did for Canadians. Similarly, incongruent face-body combinations impaired facial emotion recognition more for Japanese than Canadian participants. These findings extend work on cultural differences in emotion recognition from interpersonal to intrapersonal contexts with implications for intercultural understanding.

Keywords: person perception, emotion recognition, holistic thinking, culture

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Culture profoundly influences the way people think and perceive (Markus & Kitayama, 1991; Miyamoto, 2013; Na et al., 2010; Nisbett & Miyamoto, 2005; see Bjornsdottir & Rule, in press, for review). One central cultural difference concerns processing style: East Asian individuals tend to perceive and think holistically (processing objects and people in relation to their context—e.g., nonfocal objects in the field of view) whereas Western individuals tend to perceive and think analytically (interpreting objects and people in a more context-independent manner; Ji, Peng, & Nisbett, 2000; Miyamoto, 2013; see also Ko, Lee, Yoon, Kwon, & Mather, 2011; Kuwabara, Son, & Smith, 2011). Indeed, studies have reported that East Asians pay more attention to the context in which an object is situated than Westerners do, and that they process objects as wholes rather than as separate parts or features (Choi, Koo, & Choi, 2007; Chua, Boland, & Nisbett, 2005; Kitayama, Duffy, Kawamura, & Larsen, 2003; Masuda & Nisbett, 2006).

This difference is particularly relevant to person perception. Masuda et al. (2008), for instance, asked participants to identify the facial emotion of a centrally presented cartoon character while disregarding the faces of background characters, who displayed either congruent or incongruent emotional expressions. Japanese participants (whose holistic processing style led them to incorporate the context more than Western participants in a comparison group) perceived the central character's expression differently based on the social context created by the background faces. That is, the context created by the other faces influenced the perceived emotional intensity of the central character's face, demonstrating not only that context can powerfully affect emotion recognition but that individuals from cultures that promote holistic

thinking show greater susceptibility to contextual cues than do individuals from cultures that encourage analytic thinking.

Although such work suggests that culture interacts with information in the *interpersonal* context surrounding a person, it is unclear whether the *intrapersonal* context might show a similar pattern. Given that the face and body both constitute parts of an individual, perceivers may process mismatches in the emotions simultaneously expressed by a face and body differently than they process mismatches in the emotions simultaneously expressed by different individuals. For example, someone with a smiling face may not appear happy if that person's body simultaneously expresses a negative emotion (e.g., Ekman, Friesen, & O'Sullivan, 1988).

Indeed, de Gelder and her colleagues demonstrated just this—participants were more likely to categorize individuals with smiling faces as happy, scared faces as afraid, and scowling faces as angry when their bodies also displayed happiness, fear, and anger, respectively (as opposed to a different emotion; Meeren, Heijnsbergen, & de Gelder, 2005; van den Stock, Righart, & de Gelder, 2007). Aviezer and his colleagues similarly found that emotion recognition from faces varied as a function of the context created by the bodies associated with them (Aviezer et al., 2008; Aviezer, Bentin, Dudarev, & Hassin, 2011; Aviezer, Trope, & Todorov, 2012a). Borrowing methods used to measure the holistic processing of facial features (see Young, Hellawell, & Hay, 1987), participants in their studies recognized disgusted faces better when presented with emotionally congruent (disgusted) bodies than when presented with emotionally incongruent (angry, sad, or fearful) bodies—even when encouraged to disregard the body altogether—because they perceived the face-body composites as wholes, rather than separate and dissociable parts. This occurred whether the faces and bodies were aligned (appearing as a single entity) or misaligned (appearing as distinct parts), though misalignment

did somewhat disrupt emotion recognition (both facilitation of congruent pairs and impairment of incongruent pairs), suggesting that people perceive face-body composites holistically. The context created by the body can therefore influence the interpretation of facial expressions.

No research to date has explored how cultural differences might influence this holistic face-body perception, however. Both Aviezer and his colleagues and de Gelder and her colleagues only tested the influence of the body's context on facial emotion recognition in Western perceivers. Their findings for Westerners fit the patterns observed elsewhere showing that both Eastern and Western perceivers integrate contextual emotional information from nonvolitional agents (e.g., landscapes) but that only Eastern perceivers integrate contextual information from volitional agents (e.g., other individuals; Ito, Masuda, & Hioki, 2012; Ito, Masuda, & Li, 2013). Thus, Western perceivers in Aviezer and colleagues' and de Gelder and colleagues' work did not seem to view bodies as separate agents but, rather, as parts of a whole person (indeed, they integrated the two sources of information automatically; Aviezer et al., 2011). Given that previous cultural psychology studies have suggested that thinking styles relate to field-dependence (i.e., the perception of relations between objects and the environments in which they appear; see Berry, 1991; Witkin & Goodenough, 1976) and increased attention to context, more generally, the extent to which bodies affect perceptions of accompanying faces may differ between holistic versus analytic thinkers (Nisbett, Peng, Choi, & Norenzayan, 2001; see also Matsumoto, Hwang, & Yamada, 2010). Specifically, individuals from cultures that promote holistic thinking may be more susceptible to the (in)congruence of emotions expressed by a face and body than individuals from cultures that promote analytic thinking might be (e.g., Masuda et al., 2008). Moreover, people may habitually attend to different parts of a person when reading others' emotions depending on their culture. That is, East Asian individuals may attend

more to bodies than Western individuals do, consistent with cultural differences in attention to context (e.g., Masuda & Nisbett, 2006).

We tested this here by examining whether participants' culture (Japanese or Canadian) affected (a) to which feature (the face or body) participants attune more in their emotion judgments and (b) the degree to which bodily expressions of emotion influence the accuracy of emotion recognition from faces (and vice versa). Examining cultural differences in emotion recognition in an intrapersonal context builds upon previous research on holistic processing (e.g., Markus & Kitayama, 1991), broadens the scope of past findings showing culture-based emotion recognition differences for interpersonal contexts (e.g., Masuda et al., 2008), and extends existing work on face-body integration to another culture (e.g., Aviezer et al., 2008, 2011, 2012a; Meeren et al., 2005; van den Stock et al., 2007).

We first tested participants' attention to faces versus bodies in face-body composites by examining how often their judgments of the target person's emotion corresponded to the emotion expressed by the face versus the emotion expressed by the body (Study 1). We next explored the degree to which the bodies (vs. faces) disrupted or facilitated emotion judgements of the faces (vs. bodies) in the composites (Study 2). We therefore compared participants' emotion recognition accuracy for the faces in face-body composites to their baseline accuracy when the faces were presented in isolation (as in past studies; see Aviezer et al., 2012a). In complement, we compared participants' emotion recognition accuracy for the bodies in the face-body composites to their baseline accuracy when the bodies appeared in isolation. Together, these two studies allowed us to test whether Canadian and Japanese perceivers differed in their attention to intrapersonal context (bodies) and in their integration of face and body cues.

We hypothesized that Japanese perceivers would pay more attention to bodies (in line with their greater focus on context in previous research) and that Canadian participants would pay greater attention to faces (as previous research in Western samples has found more attention to the face than the body in naturalistic scenes; e.g., Bindemann, Scheepers, Ferguson, & Burton, 2010; Stoesz & Jakobson, 2014) when judging the emotions of face-body composites. Furthermore, we expected that emotionally congruent face-body composites would facilitate participants' emotion recognition compared to baseline (either face or body emotion recognition accuracy, as defined above) and that emotionally incongruent composites would impair accuracy—particularly for Japanese participants, whose culture emphasizes holistic thinking.

Study 1A

We began by testing participants' tendency to focus on the face versus body when judging others' emotions. We thus presented participants with emotionally expressive face-body composites and asked them to categorize the emotion expressed by each individual. Examining the degree to which their answers corresponded to the emotion expressed by the face versus body revealed perceivers' attentional tendencies. Consistent with previous research on cultural differences in visual attention, we expected Canadian participants to focus more on the face (as reflected by answers corresponding more to the emotions expressed by the face) and Japanese participants to focus more on the body (indicated by answers corresponding more to the emotions expressed by the body).

Method

Materials. We borrowed the face and body stimuli from Aviezer et al. (2012a). The faces consisted of 10 Caucasian men posing prototypical facial expressions of disgust and sadness for a total of 20 stimuli. The bodies consisted of four headless men conveying either disgust,

sadness, anger, or fear through their stance, gesture, and surroundings digitally added to the images (e.g., a gravestone for sadness). The previous work using these stimuli validated the recognizability of the emotions (Aviezer et al., 2008). Each face appeared with each body for a total of 80 unique combinations. In addition, the faces were oriented to the bodies so as to appear either aligned (face ostensibly attached to the body) or misaligned (face and body spatially separated). To generate naturalistic face-body composites, each face appeared proportionally positioned on the body in the aligned condition. To provide a clear separation between the face and body, the face appeared horizontally displaced to the right of the body in the misaligned condition, as in Aviezer et al. (2012a). Each participant saw all 160 images (the 80 combinations with aligned and misaligned variations) in a repeated-measures design.

Participants and procedure. Thirty-five European-Canadian (24 female, 10 male, 1 unknown; M_{age} = 19.59 years, *SD* = 3.86) and 32 Japanese (15 female, 17 male; M_{age} = 19.80 years, *SD* = 0.70) participants from Canadian and Japanese universities, respectively, viewed each stimulus on a computer, selecting the emotion experienced by the pictured individual via key press (1 = *fear*, 2 = *anger*, 3 = *sadness*, 4 = *disgust*; the emotions and their associated keys appeared on-screen during each trial). They first separately categorized the emotional expressions of the 20 faces and four bodies in random order within two randomly ordered blocks. Participants' accuracy in recognizing the isolated faces and bodies' emotions verified the targets' legibility. Following the two initial blocks, participants categorized the emotions of the 160 face-body composites, again based on the instructions to select the emotion experienced by the pictured individual; importantly, we did not specify whether participants should focus on the body or the face when making their judgments (in contrast to previous work; e.g., Aviezer et al., 2012a). The pictures appeared in random order and all materials were translated from English to

Japanese and then back-translated to English by two independent translators to ensure cultural equivalence (see Appendix for Japanese-translated instructions).

Results

Manipulation check. We first examined the participants' emotion recognition accuracy for the isolated faces and bodies. To confirm the legibility of the facial expressions of emotion, we calculated the proportion that each participant correctly categorized. Overall, participants recognized both sadness (M = .68, SD = .17) and disgust (M = .39, SD = .23) significantly more accurately than chance (.25), ts ≥ 5.17, ps < .001, rs$_{\text{effect size}}$ ≥ .57.[1] Because there were only four bodies, we computed the proportion of participants in the sample that accurately categorized the emotional expression of each of the bodies to confirm their legibility. In all cases, at least 94% of participants correctly categorized the emotion expressed by the body, values much greater than chance guessing (25%). Thus, both the faces and bodies adequately communicated their intended emotions, as reported in previous work (e.g., Aviezer et al., 2012a).

Main analysis. To examine participants' preferred source of emotion information, we calculated the proportion of their judgments that corresponded to the face's emotion and to the body's emotion in each composite. We then submitted these proportions of correct responses to a 2 (Culture: Canadian, Japanese) × 2 (Reference Point: face, body) × 2 (Alignment: aligned,

[1] For Japanese participants, recognition of the disgust faces (M = .27, SD = .16) was only at chance level, $t(31) = 0.79$, p = .22, $r_{\text{effect size}}$ = .14, consistent with Jack, Blais, Scheepers, Schyns, & Caldara (2009). The results of the main analyses did not significantly differ based on the facial emotion (i.e., sad vs. disgusted), however (see Table S1 in Electronic Supplementary Material, ESM, for descriptive statistics split by participant culture, face emotion, and body emotion).

misaligned) ANOVA with repeated measures on the last two factors (see ESM for an exploratory ANOVA including face emotion and body emotion as factors). We did not anticipate any effects of alignment but included it to accord with prior work (e.g., Aviezer et al., 2012a). This analysis revealed main effects of Reference Point (more responses matching the expression on the body, $M = .53$, $SD = .36$, than the expression on the face, $M = .47$, $SD = .34$) and Alignment (better accuracy for aligned $M = .51$, $SD = .36$, vs. misaligned composites, $M = .49$, $SD = .33$), which significantly interacted (see Table 1). Decomposing the interaction showed no difference between the proportion of responses corresponding to the emotion displayed by the face ($M = .48$, $SD = .32$) and the body ($M = .50$, $SD = .35$) when misaligned, $t(66) = 0.53$, $p = .60$, $r_{\text{effect size}} = .07$, but more answers corresponding to the emotion expressed by the body ($M = .56$, $SD = .36$) than the face ($M = .46$, $SD = .35$) in aligned composites, $t(66) = 2.96$, $p = .004$, $r_{\text{effect size}} = .34$.

Most important, Culture and Reference Point also interacted, $F(1, 65) = 23.36$, $p < .001$, $r_{\text{effect size}} = .51$ (see Figure 1). Decomposition showed that Canadian participants' responses corresponded to the face's emotion ($M = .53$, $SD = .31$) marginally more than to the body's emotion ($M = .46$, $SD = .37$), $t(34) = 1.68$, $p = .07$, $r_{\text{effect size}} = .28$, whereas Japanese participants' responses corresponded to the body's emotion ($M = .60$, $SD = .33$) significantly more than to the face's emotion ($M = .40$, $SD = .35$), $t(31) = 5.60$, $p < .001$, $r_{\text{effect size}} = .71$.

Discussion

Overall, our results suggest that Canadian and Japanese perceivers may preferably attend to the face and body, respectively, when presented with emotional face-body composites. This provides evidence supporting past demonstrations that East Asian perceivers attend more to context (here, the bodies) and that Western perceivers attend more to focal objects (here, the

faces; e.g., Masuda & Nisbett, 2006). Thus, the body may create a context for perceiving the face.

We also observed an unanticipated interaction between reference point and alignment, whereby perceivers' responses corresponded more to bodies than faces in aligned but not misaligned composites. The relatively greater size and salience of the bodies compared to the faces might explain this, as the bodies might be easier to ignore when displaced from the faces. Further study is needed to resolve this speculation, however.

Study 1B

The results of Study 1A provided evidence for cultural differences in perceivers' focus on the face versus body in emotion processing. The study only employed Caucasian targets, however. As previous research has shown that perceivers attend more to the faces of ingroup members (e.g., Van Bavel & Cunningham, 2012), we wanted to ensure that our results were not simply due to ingroup effects. We therefore replicated Study 1A with East Asian targets in Study 1B.

Method

Materials. We borrowed the faces of East Asian men expressing emotions from the database developed by Chen et al. (2009), which they constructed following Ekman and Friesen's (1978) criteria—therefore providing a good analogue to the Caucasian faces used by Aviezer and colleagues (e.g., Aviezer et al., 2008); details on the norming and validation of the database can be found in Chen et al.'s report. To parallel the Caucasian stimuli used above, we selected 10 models posing disgusted and sad expressions from the database and photographed an East Asian male model posing sad, fearful, angry, and disgusted bodily expressions while wearing attire similar to the model in Aviezer et al.'s (2008) original work. We subsequently

edited the images to remove the model's head and incorporate the same surrounding materials used by Aviezer and colleagues (see Figure 2). We then superimposed the 20 faces (10 sad, 10 disgusted) onto the four bodies (sad, fearful, angry, and disgusted) in similar aligned and misaligned configurations for a total of 160 stimuli.

Participants and procedure. We recruited 32 European-Canadian (24 female, 4 male, 4 unknown; M_{age} = 18.64 years, *SD* = 1.52) and 32 Japanese (20 female, 12 male; M_{age} = 20.19 years, *SD* = 0.95) undergraduates to participate in the study. The procedure was identical to Study 1A.

Results

Manipulation check. We again computed the proportion of accurately categorized faces and bodies to confirm the legibility of the emotional expressions. As with the Caucasian stimuli above, participants recognized the sad (*M* = .54, *SD* = .19) and disgust (*M* = .44, *SD* = .20) facial expressions significantly better than chance (.25), ts ≥ 7.82, ps < .001, rs $_{\text{effect size}}$ ≥ .73, and at least 92% of participants correctly categorized the emotions expressed by the bodies for all four emotions.

Main analysis. As in Study 1A, we calculated the proportion of judgments corresponding to the face's emotion and to the body's emotion in each composite and submitted these scores to a 2 (Culture: Canadian, Japanese) × 2 (Reference Point: face, body) × 2 (Alignment: aligned, misaligned) ANOVA with repeated measures on the latter two factors (see ESM for exploratory ANOVA including face emotion and body emotion as factors). This revealed main effects of Culture (i.e., a greater proportion of responses corresponding to an emotion displayed by either the target's face or body by Japanese, *M* = .51, *SD* = .34, vs. Canadian participants, *M* = .48, *SD* = .29) and Reference Point (i.e., more responses matching the emotion expressed by the body, *M*

= .56, *SD* = .30, than by the face, *M* = .42, *SD* = .32), which again interacted (see Table 2). Although Canadian participants' emotion recognition judgments did not correspond more to the face (*M* = .49, *SD* = .28) than to the body (*M* = .46, *SD* = .29), $t(31) = 0.82$, $p = .42$, $r_{\text{effect size}} = .15$, Japanese participants' responses significantly favored the body (*M* = .67, *SD* = .27) over the face (*M* = .36, *SD* = .34), $t(31) = 8.28$, $p < .001$, $r_{\text{effect size}} = .83$ (see Figure 3).

Also paralleling Study 1A, Reference Point and Alignment interacted, $F(1, 62) = 26.40$, $p < .001$, $r_{\text{effect size}} = .55$. Participants' responses corresponded more to the expression on the body (*M* = .54, *SD* = .30) than the face (*M* = .44, *SD* = .31) when misaligned, $t(63) = 2.88$, $p = .005$, $r_{\text{effect size}} = .34$; a difference that exacerbated when the body (*M* = .58, *SD* = .29) and face (*M* = .41, *SD* = .33) were aligned, $t(63) = 5.01$, $p < .001$, $r_{\text{effect size}} = .53$.

Comparisons between samples. Despite similar results with Caucasian targets in Study 1A, we wanted to compare the findings between the target races. We therefore aggregated the data across Studies 1A and 1B and examined target race (East Asian, Caucasian) as a potential moderator of the Culture × Reference Point interaction. Neither the Culture × Reference Point × Target Race, $F(1, 254) = 1.31$, $p = .25$, $r_{\text{effect size}} = .07$, nor the Reference Point × Alignment × Target Race three-way interactions produced significant results, $F(1, 254) = 0.01$, $p = .94$, $r_{\text{effect size}} = .004$.

Discussion

The results of Study 1B largely replicated those of Study 1A, providing further evidence that Japanese perceivers focus more on the body than the face when judging emotions (consistent with East Asians' proclivity to attend to contextual information; e.g., Masuda & Nisbett, 2006). In contrast to the marginal difference in Study 1A, however, Canadian perceivers did not significantly prefer the face over the body (though the means fit this pattern). This discrepancy

could result from the East Asian targets not belonging to European-Canadian perceivers' racial ingroup, leading them to attend less to their faces. The degree to which members of the two cultures integrate information from the face versus body remains an open question, however. We therefore tested this in Study 2.

Study 2

The results of Study 1 indicate that Japanese perceivers attend more to the body and Canadian perceivers may attend somewhat more to the face when presented with emotional face-body composites. This reveals perceivers' primary or preferred source of emotion information, demonstrating that East Asian perceivers indeed attend more to contextual information, even in an intrapersonal (vs. interpersonal) context. These results leave unanswered how much the bodies (vs. faces) disrupt or facilitate emotion judgments of the faces (vs. bodies) for perceivers of each culture, however. In Study 2, we therefore tested whether Canadian and Japanese perceivers also differed in their degree of face-body integration (that is, the degree to which they processed the face-body composites holistically). We anticipated that we would replicate Aviezer et al.'s (2012a) findings, such that all perceivers would integrate the emotions of the faces and bodies but that Japanese perceivers would do so to a greater extent, in line with East Asians' greater tendency towards holistic processing (e.g., Masuda et al., 2008).

Method

Materials. Given the similarity of the results for the Caucasian and East Asian targets across Studies 1A and 1B, we only employed the Caucasian targets from Study 1A to minimize task length.

Participants and procedure. We recruited 41 Canadian undergraduates (35 female, 6 male; M_{age} = 18.41 years, SD = 1.79; 8 Caucasian, 8 East Asian, 7 mixed-race, 6 South Asian, 4

Southeast Asian, 3 African, 2 Hispanic, 2 Middle Eastern, 1 unknown ethnicity; all Canadian citizens) and 42 Japanese undergraduates (20 female, 22 male; M_{age} = 19.73 years, SD = 1.07). This more ethnically diverse Canadian sample allowed us to test the pervasiveness of cultural differences across racial lines, simultaneously providing a more conservative test of our hypotheses and avoiding the conflation of ethnicity and culture. Participants followed the same procedure as in Study 1, albeit with two counterbalanced blocks (rather than one) displaying the 160 face-body composites. In one block, we asked participants to categorize the emotion displayed by the face in each composite; in the other block, we asked participants to categorize the emotion displayed by the body. Although previous research has largely only asked participants to judge the faces in face-body composites (e.g., Aviezer and colleagues' work), evidence also suggests that the face and body each reciprocally influence interpretation of the other's emotions (Kret, Stekelenburg, Roelofs, & de Gelder, 2013). These two blocks therefore allowed us to examine whether emotion integration occurred similarly when focusing on the face versus the body.

Results

Manipulation check. We first confirmed the legibility of the emotions expressed by the faces and bodies in isolation, as in Studies 1A and 1B. Accuracy significantly exceeded chance (.25) for both the disgusted (M = .37, SD = .22) and sad faces (M = .65, SD = .16), ts ≥ 4.80, ps < .001, rs$_{effect\ size}$ ≥ .47.[2] Furthermore, at least 87% of participants correctly identified each emotion expressed by the four bodies.

[2] As in Study 1A, Japanese participants' recognition of the disgust faces (M = .27, SD = .18) did not significantly differ from chance, $t(41) = 0.76$, p = .23, $r_{effect\ size}$ = .09. The pattern of results

Main analysis. Given our interest in the degree to which congruent and incongruent composites facilitated and impaired emotion recognition accuracy, we used difference scores in our analyses. Accuracy for the isolated faces and bodies served as measures of baseline accuracy, with positive difference scores indicating facilitated recognition compared to baseline and negative difference scores suggesting interference. We calculated difference scores from baseline accuracy in two ways. For the face-focused block, we subtracted each participant's average accuracy for judgments of the sad and disgusted isolated faces from their respective accuracy for that emotion in the face-body composites. For the body-focused block, however, we subtracted participants' average accuracy for the *entire* body-only block from their accuracy for the bodies appearing in composites because we only used one version of each body (and thus would have only had dichotomous point estimates for the separate body-only emotions). We then conducted a 2 (Culture: Canadian, Japanese) × 2 (Congruence: congruent, incongruent) × 2 (Focus: face, body) × 2 (Alignment: aligned, misaligned) ANOVA with repeated measures on all factors but Culture. This revealed main effects of Focus, Congruence, and Alignment, qualified by a series of interactions (see Table 3 for full results). More important, four significant two-way interactions emerged: Culture × Congruence, Culture × Focus, Congruence × Focus, and Congruence × Alignment.

Most central, the Culture × Congruence interaction showed that Japanese participants' performance (M = .14, SD = .15) improved more compared to baseline for emotionally congruent face-body composites than Canadian participants' performance did (M = .06, SD = .16), $t(81)$ =

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was the same for disgusted and sad faces, however; we therefore collapsed across facial emotion in our analyses.

2.34, $p = .02$, $r_{\text{effect size}} = .25$ (see Figure 4), as hypothesized. Reciprocally, Japanese participants ($M = -.19$, $SD = .15$) performed worse compared to baseline for emotionally incongruent face-body composites to a greater degree than Canadian participants did ($M = -.12$, $SD = .14$), $t(81) = -2.42$, $p = .01$, $r_{\text{effect size}} = -.26$.[3]

Decomposing the Culture × Focus interaction revealed that Japanese participants' performance in the body-focused block ($M = -.13$, $SD = .19$) did not differ from Canadian participants' performance ($M = -.07$, $SD = .21$), $t(81) = -1.30$, $p = .20$, $r_{\text{effect size}} = -.14$. In contrast, Japanese participants ($M = .07$, $SD = .14$) performed marginally better compared to baseline than Canadian participants in the face-focused block ($M = .01$, $SD = .15$), $t(81) = 1.90$, $p = .06$, $r_{\text{effect size}} = .21$. That is, adding the face to the body similarly hindered Japanese and Canadian participants' performance, but adding the body to the face boosted Japanese participants' performance slightly more than it did Canadian participants' performance.

Furthermore, the Congruence × Focus interaction demonstrated that participants' accuracy improved over baseline for emotionally congruent face-body composites when focusing on the face ($M = .22$, $SD = .21$), $t(82) = 9.45$, $p < .001$, $r_{\text{effect size}} = .72$, but not when focusing on the body ($M = -.02$, $SD = .21$), $t(82) = -1.01$, $p = .32$, $r_{\text{effect size}} = -.11$. For emotionally incongruent face-body composites, however, performance fell similarly below baseline when

[3] Canadian participants' baseline for facial emotion recognition ($M = .58$, $SD = .12$) exceeded that of Japanese participants ($M = .44$, $SD = .14$), $t(81) = 5.13$, $p < .001$, $r_{\text{effect size}} = .50$, in line with Japanese perceivers' lesser attention to faces in Study 1. Canadian ($M = .97$, $SD = .08$) and Japanese participants' ($M = .95$, $SD = .10$) baseline accuracy for the bodies' emotions did not differ, $t(81) = 1.12$, $p = .27$, $r_{\text{effect size}} = .12$.

focusing on both the face (M = -.13, SD = .18) and body (M = -.17, SD = .24), $t(82) = 1.05$, $p = .30$, $r_{\text{effect size}} = .12$ (see Figure 5).

Finally, the Congruence × Alignment interaction indicated that performance was farther above baseline when the face and body were aligned (M = .12, SD = .16) than when misaligned (M = .07, SD = .17) for congruent face-body composites, $t(82) = 6.06$, $p < .001$, $r_{\text{effect size}} = .56$. Performance for incongruent face-body composites was similar regardless of whether the face and body were aligned (M = -.16, SD = .15) or misaligned (M = -.15, SD = .15), however, $t(82) = -1.61$, $p = .10$, $r_{\text{effect size}} = -.18$. A three-way Congruence × Focus × Alignment interaction qualified this result, showing greater accuracy for aligned faces and bodies except in the incongruent face-focused trials, in which accuracy was higher when misaligned (M = -.11, SD = .19) than aligned (M = -.16, SD = .18), $t(82) = -5.66$, $p < .001$, $r_{\text{effect size}} = -.53$.

Discussion

The results of Study 2 showed that adding an emotionally expressive body can facilitate or hinder recognition of a face's emotion (depending on whether it expresses the same or a different emotion, respectively), replicating previous research (e.g., Aviezer et al., 2012a). However, whereas adding an emotionally incongruent face to a body resulted in impairment, emotionally congruent faces did not seem to facilitate reading the bodies' emotions—likely an artifact of the high legibility of the bodies' emotions at baseline. Had the bodies expressed the emotions more subtly, we may have seen patterns parallel to the face-focus condition (consistent with Kret et al.'s, 2013, findings). Indeed, comparable impairment for incongruent face-body composites regardless of focus suggests that the face and body may provide similar value for holistic emotion judgments, even if they offered asymmetric signal quality in our stimulus set. Thus, although this study may not have provided the best test of whether emotion integration

functions similarly when focusing on the body versus the face, the results provide an initial suggestion that information integration occurs when judging a person's emotional state, irrespective of one's focus.

Regardless of whether they focused on the face or body, Japanese and Canadian participants responded similarly in terms of the (in)congruence of the emotions expressed by the two, differing only in degree. Specifically, Japanese participants improved more than Canadian participants when the emotions expressed by the face and body matched; likewise, their performance suffered significantly more when the face and body did not match. This provides evidence that Japanese participants incorporated the entire stimulus (the face plus body) in their emotion judgments more than Canadian participants did, lending support to our hypothesis. Furthermore, these results emerged among a racially diverse sample of Canadians, increasing their generalizability and removing the conflation of culture with ethnicity. Finally, we found that the presence of bodies boosted Japanese participants' performance for facial emotion recognition slightly more than it did Canadian participants' performance, consistent with Japanese perceivers' greater attention to bodies in Study 1.

General Discussion

Culture affects cognitive and perceptual processing, including both part-whole perception (Nisbett & Miyamoto, 2005) and emotion recognition (Elfenbein & Ambady, 2003). The present work examined the combination of these phenomena by showing that cultural differences in analytic versus holistic processing influenced both emotion recognition accuracy and where perceivers focus when judging emotions. Study 1 showed that Japanese perceivers attended more to the body than the face when evaluating the emotions of face-body composites. In contrast, Canadian perceivers showed some tendency to focus more on the face. These results align with

previous work finding that East Asian perceivers attend more to contextual cues (e.g., Masuda et al., 2008), extending this literature to an intrapersonal context.

Moreover, although both Japanese and Canadian participants in Study 2 detected faces' emotions more accurately when paired with emotionally congruent bodies, Japanese participants (who tend to think more holistically) showed even greater facilitation than Canadian participants (who tend to think more analytically) did. Emotionally incongruent face-body composites furthermore hindered the Japanese perceivers' accuracy more than Canadian perceivers' accuracy, regardless of whether they focused on the face or body. These results corroborate earlier research showing that perceptual context influences holistic thinkers more than analytic thinkers (Kitayama et al., 2003). Holistic thinkers may therefore be better able to consider multiple, competing cues when assessing others' emotions, such as when someone experiencing sadness or anger masks these feelings with a smile (Ekman & Friesen, 1969). Cultural differences therefore appear to affect the integration of information from the face and body, adding to previous research demonstrating that people view faces and bodies as a single unit when judging targets' emotions (Aviezer et al., 2012a).

The value of these results notwithstanding, our research also suffered several key limitations. First, all of the body stimuli except anger contained additional objects that communicated information to the participants beyond the body itself (e.g., a gun for fear). Given that we found a similar influence of the body on the perception of emotions from faces in all face-body combinations including anger, however (see Table S6 in ESM), we believe that the presence of objects probably did not strongly influence the data. More problematic, we had only one body stimulus for each emotion, all of which displayed obvious expressions (leading to a ceiling effect in the body-focus condition of Study 2). Future researchers investigating questions

related to this topic should therefore consider using a greater number of more subtly expressive body stimuli (e.g., the BEAST or BESST stimulus sets; de Gelder & van den Stock, 2011; Thoma, Bauser, & Suchan, 2013), allowing for a better examination of holistic emotion judgments when focusing on the body.

Second, the present and previous work on face-body emotion integration has primarily examined negative emotions, owing to their greater ambiguity (e.g., Aviezer et al., 2008, 2011, 2012a, 2012b; Meeren, et al., 2005). Researchers may therefore profit from considering whether intrapersonal context similarly influences perceptions of various positive emotions, including whether cultural differences in chronic focus and degree of face-body integration persist. Moreover, combining positive and negative emotions within one individual (such as when people attempt to mask their negative emotions) would extend the current studies in an important and ecologically valid way, given the frequency with which people often attempt to conceal their negative emotions (e.g., Friesen, 1972). Previous work has only examined positive and negative emotions within single individuals for highly intense emotions (see Aviezer et al., 2012b) and emotions indicating threat (e.g., fear and anger vs. happiness; Kret et al., 2013; van den Stock et al., 2007), leaving more common attempts to conceal emotions untested (e.g., hiding sadness with a smile, masking excitement with a serious expression).

Third, people typically do not express incongruent emotions in their faces and bodies, except perhaps when lying (e.g., Ekman & Friesen, 1969). Though an important point, here we simply used emotional expressions to examine how cognitive styles influence attention to, and integration of, information communicated by the body and face. Thus, even if the ecological validity of our manipulations was not particularly high, we expect that we could generalize these results to reach similar conclusions about how cognitive styles influence attentional tendencies

and the integration of other social information from the body and the face. Whereas the present data therefore help to address basic scientific questions about the salience and cooperation between signals expressed by the face and body in person perception, we see definite value in applying the principles we observed in the lab to more common real-world events.

Despite their shortcomings, these results have important implications for cross-cultural interactions. Cultural differences in focusing on the face versus body indicate that East Asian and Western interlocutors will look to different sources of information to understand emotion, and may therefore express their own emotions differently. That is, East Asians may employ more bodily expressions than facial expressions to convey emotion, whereas Westerners may use facial expressions to a greater degree than bodily expressions. Previous research on nonverbal accents in emotional facial expressions supports this possibility (see Marsh, Elfenbein, & Ambady, 2003), but future research should directly test how much individuals rely on facial versus bodily emotional expressions in their interactions. Should such a difference in expressive behavior exist, this indicates one important source of difficultly in reading emotions cross-culturally: A person may express emotions with features to which their conversation partner does not tend to attune. Indeed, cultural differences in face-body integration suggest multiple sources of cross-cultural difficulties. For instance, mixed emotional signals may impact East Asian individuals particularly strongly. On the one hand, this may lead to greater confusion; on the other, however, it may promote a greater sensitivity to emotional complexity overlooked by Western perceivers. Further tests should explore these possibilities to better grasp how people perceive and interpret emotional signals during cross-cultural interactions.

Conclusion

The current findings therefore demonstrate that cultural differences may affect both (a) where perceivers attend when judging emotions and (b) the perception of a person as a whole. Japanese perceivers tended to focus on others' bodies when reading their emotions, whereas Canadian perceivers slightly favored their faces. This extends previous research on cultural differences in contextual focus to the intrapersonal domain. Furthermore, although both Canadian and Japanese participants perceived the face-body composites as single units (in which the emotions of each affects perception of the other), Japanese participants integrated the information more, expanding the literature on cultural differences in holistic and analytic thinking styles by showing that context may preferentially influence East Asians' perceptions, even when directly attached to the focal stimulus (i.e., a person and his or her face or body). Thus, cultural differences seem to affect perceivers' preferred source of emotion information and their perception of people as single units, impacting the integration of information from multiple sources within the same percept.

Overall, our results provide preliminary evidence for cultural differences in attention to emotional faces and bodies, and the integration of these two sources of information. Consistent with previous research finding that East Asians attend more to context and process information more holistically, our findings apply these general cognitive tendencies to the intrapersonal domain, thereby providing further evidence of the pervasive influence of culture on perception and cognition.

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Table 1

Results of the Culture × Reference Point × Alignment ANOVA Reported in Study 1A

	F	p	$r_{\text{effect size}}$
Culture	0.06	.81	.03
Reference point	5.23	.03	.27
Alignment	38.60	< .001	.61
Culture × Reference point	23.36	< .001	.51
Culture × Alignment	1.21	.27	.14
Reference point × Alignment	46.04	< .001	.64
Culture × Reference point × Alignment	2.06	.16	.18

Table 2

Results of the Culture × Reference Point × Alignment ANOVA Reported in Study 1B

	F	p	$r_{\text{effect size}}$
Culture	6.54	.01	.31
Reference point	25.38	< .001	.54
Alignment	3.35	.07	.23
Culture × Reference point	39.01	< .001	.62
Culture × Alignment	1.81	.18	.17
Reference point × Alignment	26.40	< .001	.55
Culture × Reference point × Alignment	1.12	.29	.13

Table 3

Results of the Culture × Congruence × Focus × Alignment ANOVA in Study 2

	F	*p*	$r_{\text{effect size}}$
Culture	0.00	.97	.00
Congruence	180.76	< .001	.83
Focus	25.94	< .001	.49
Alignment	21.01	< .001	.45
Culture × Congruence	17.36	< .001	.42
Culture × Focus	4.66	.03	.23
Culture × Alignment	0.51	.48	.08
Congruence × Focus	43.28	< .001	.59
Congruence × Alignment	33.94	< .001	.54
Focus × Alignment	1.59	.21	.14
Culture × Congruence × Focus	2.93	.09	.17
Culture × Congruence × Alignment	0.08	.78	.03
Culture × Focus × Alignment	3.05	.08	.19
Congruence × Focus × Alignment	40.44	< .001	.58
Culture × Congruence × Focus × Alignment	0.27	.61	.06

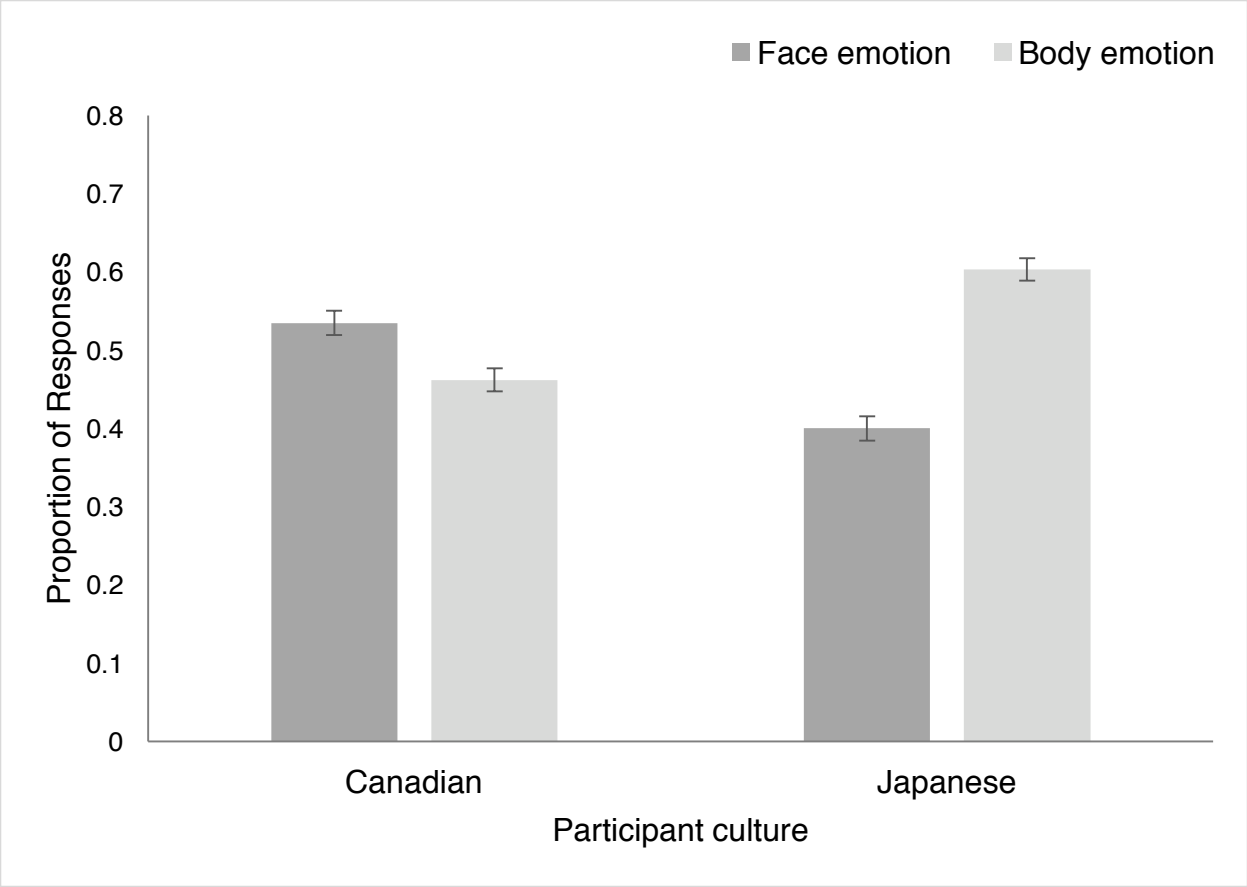

Figure 1. Proportion of answers corresponding to the emotion conveyed by the face and body as a function of participant culture in Study 1A. Error bars illustrate the standard errors of the means.

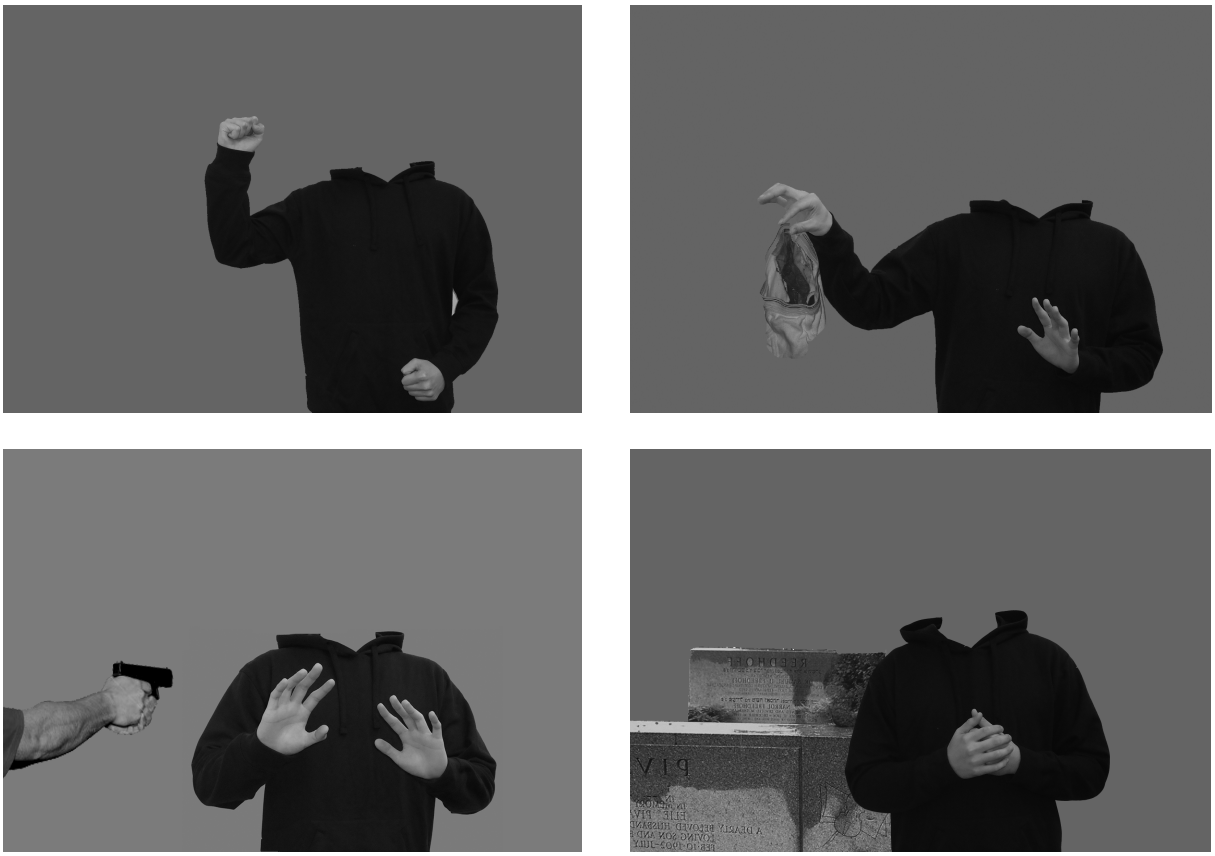

Figure 2. East Asian body stimuli used in Study 1B. Clockwise from top left: anger, disgust, sadness, and fear.

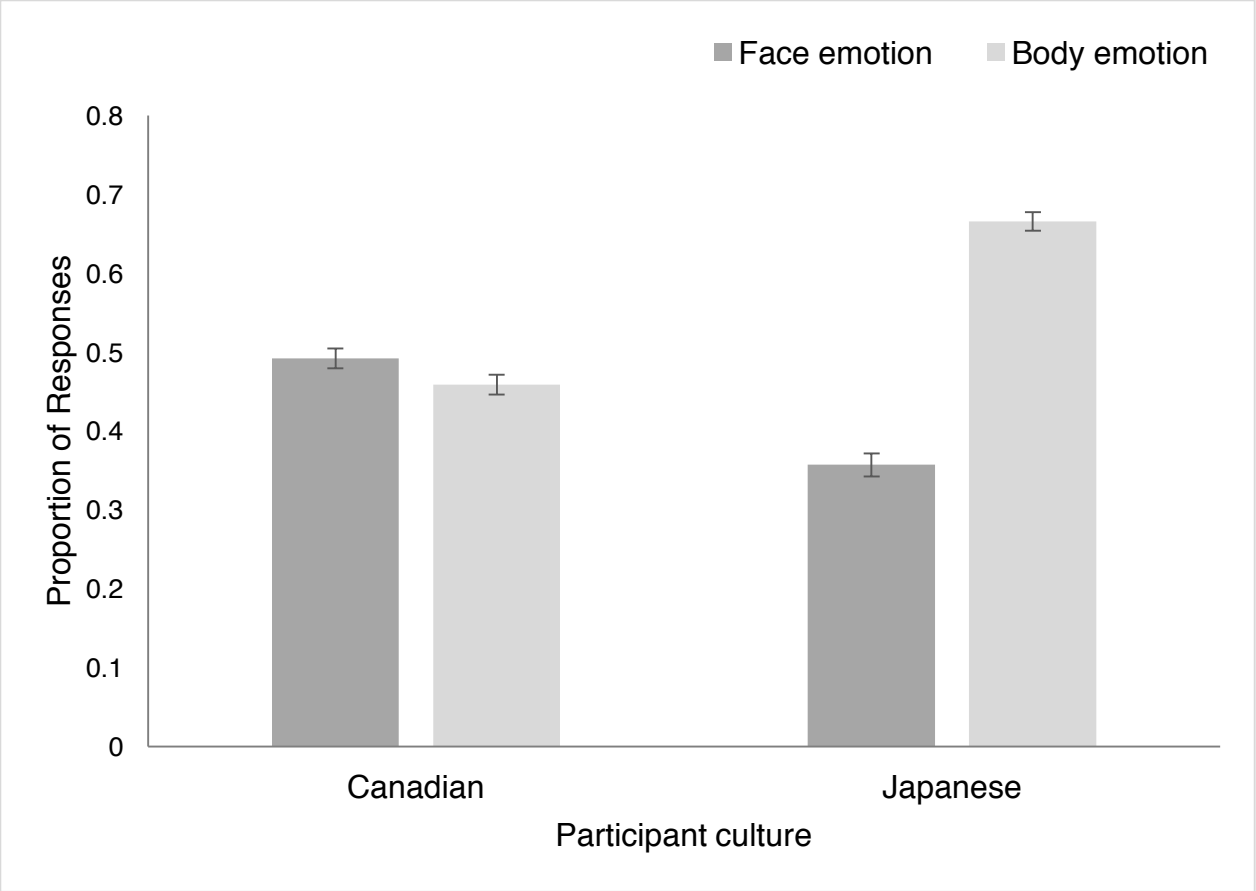

Figure 3. Proportion of answers corresponding to the emotion conveyed by the face and body as a function of participant culture in Study 1B. Error bars illustrate the standard errors of the means.

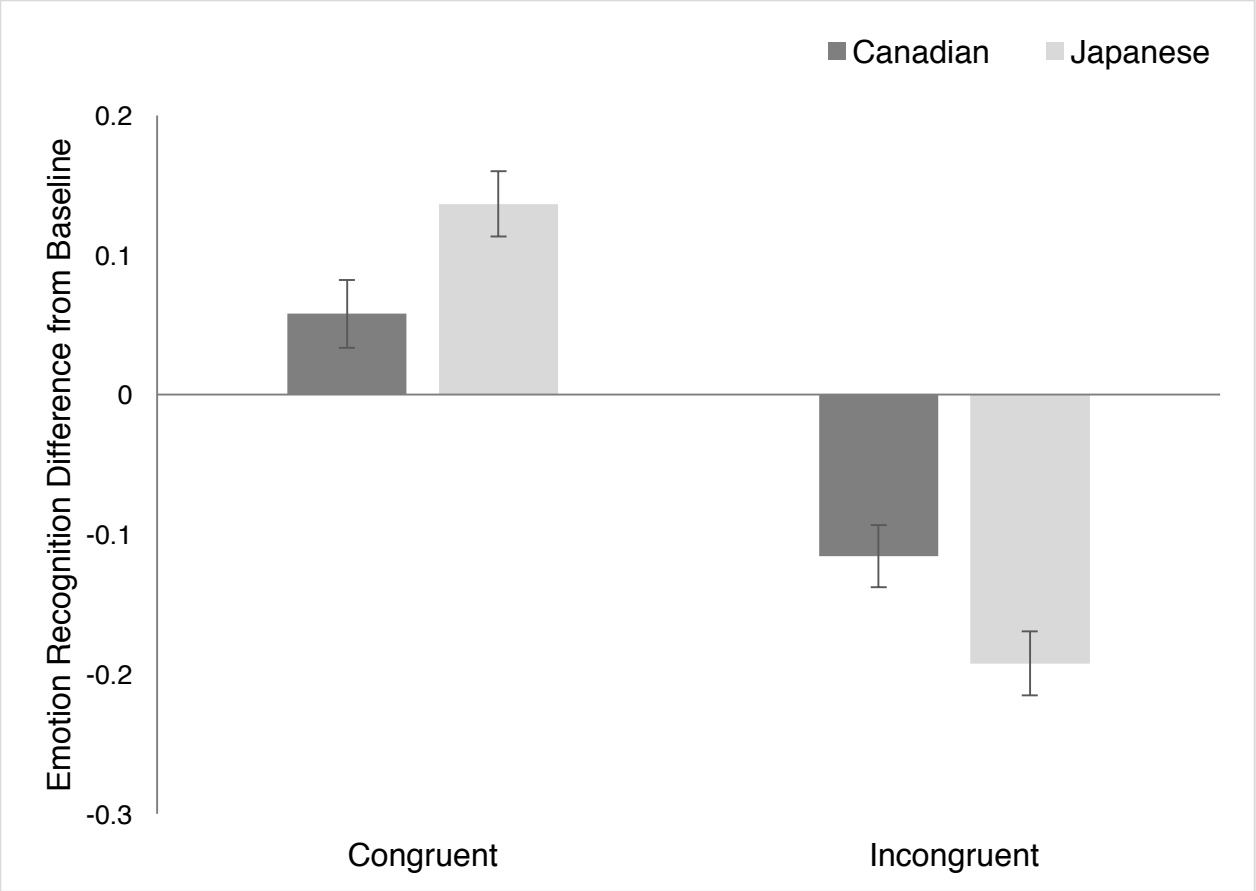

Figure 4. Illustration of the Culture × Congruence interaction in Study 2 displaying participants' emotion recognition discrepancies from baseline (i.e., emotion recognition accuracy for faces and bodies in isolation, represented by 0 on the *y*-axis) for congruent and incongruent face-body composites. Error bars indicate the standard errors of the means.

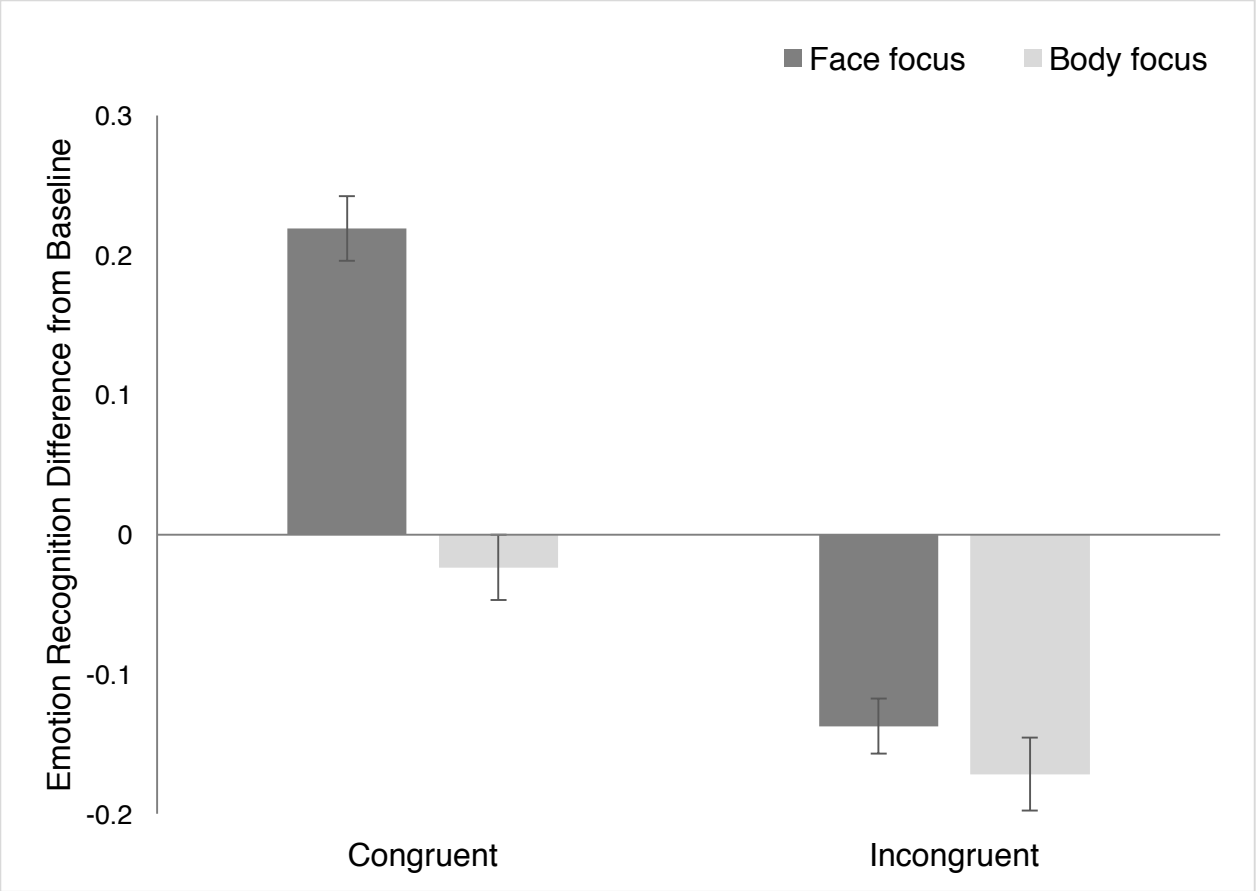

Figure 5. Illustration of the Congruence × Focus interaction in Study 2 displaying participants' emotion recognition discrepancies from baseline (i.e., emotion recognition accuracy for faces or bodies in isolation, respectively, represented by 0 on the *y*-axis) when focusing on the face and body embedded in either congruent or incongruent face-body composites. Error bars indicate the standard errors of the means.

Appendix

Instructions and response options used in the studies.

English Instructions	Japanese Instructions
Studies 1 and 2	
The following experiment will investigate the perception of emotion. All of the instructions will appear onscreen. If you have any questions, please ask the experimenter. Press space to continue.	この実験は感覚知覚を調べるものです。指示は全て画面に出ます。質問があれば、担当者に聞いて下さい。 スペースを押して先に進んで下さい。
Fear	恐れ
Anger	怒り
Sadness	悲しみ

Disgust	嫌悪
Studies 1A and 1B	
You are about to view a series of photos. Please select the emotion which you feel the individual in the picture is experiencing. Press space to continue.	これから写真を見せます。 それぞれの写真をみて、登場人物の感情を選んでください。 スペースを押して先に進んで下さい。
Study 2	
You are about to view a series of photos. Please select the emotion which you feel the individual in the picture is expressing on their face. Press space to continue.	これから一連の写真が表示されます。 写真の人物が表している表情に適していると思う感情を、次から選んでください。 スペースバーを押して次に進んでください。

You are about to view a series of photos.

Please select the emotion which you feel the individual in the picture is expressing with their body.

Press space to continue.

これから一連の写真が表示されます

写真の人物が体で表している表現に適していると思う感情を、次から選んでください。

スペースバーを押して次に進んでください。

Electronic Supplementary Material

Study 1A: Supplementary Analyses

As an exploratory test, we submitted the proportions of correct emotion recognition judgments to a 2 (Culture: European-Canadian, Japanese) × 2 (Reference Point: face, body) × 2 (Alignment: aligned, misaligned) × 2 (Face Emotion: disgust, sadness) × 4 (Body Emotion: anger, disgust, fear, sadness) ANOVA with repeated measures on all but the first factor. This revealed main effects of Reference Point, Alignment, Face Emotion, and Body Emotion, qualified by a series of interactions (see Table S2). Here, we discuss the three-way interactions most relevant to our hypothesis (data available upon request for further analysis of the interactions not discussed here).

First, we observed a significant Culture × Reference Point interaction, discussed in the main text. A Culture × Reference Point × Body Emotion interaction also emerged, $F(3, 195) = 6.48$, $p = .003$, $r_{\text{effect size}} = .30$, such that the Culture × Reference point interaction was significant for all body emotions except disgust (see Table S3). Follow-up analyses for each body emotion revealed that, for fearful body composites, Canadian perceivers' responses corresponded to the facial expression ($M = .45$, $SD = .26$) more than the bodily expression ($M = .32$, $SD = .30$), $t(34) = 2.09$, $p = .04$, $r_{\text{effect size}} = .34$, whereas Japanese perceivers' responses corresponded to the bodily expression ($M = .56$, $SD = .33$) more than the facial expression ($M = .34$, $SD = .24$), $t(31) = 4.24$, $p < .001$, $r_{\text{effect size}} = .61$. Responses for composites with sad bodies showed the same pattern: Canadians' responses favored the faces ($M = .65$, $SD = .29$) over the bodies ($M = .51$, $SD = .29$), $t(34) = 4.73$, $p < .001$, $r_{\text{effect size}} = .63$, and Japanese participants' responses favored the bodies ($M = .58$, $SD = .34$) rather than the faces ($M = .53$, $SD = .40$), $t(31) = 2.06$, $p = .048$, $r_{\text{effect size}} = .35$.

Although Japanese participants' responses similarly corresponded more to the bodies (M = .62, SD = .33) than to the faces (M = .27, SD = .30), $t(31) = 7.10$, $p < .001$, $r_{\text{effect size}} = .79$, for composites with angry bodies, Canadian participants' responses favored neither the faces (M = .41, SD = .32) nor the bodies (M = .45, SD = .39), $t(34) = 0.65$, $p = .52$, $r_{\text{effect size}} = .11$. Likewise, Canadian participants showed no preference for attending to the faces (M = .63, SD = .29) or bodies (M = .58, SD = .35) for the disgusted body composites, $t(34) = 0.96$, $p = .34$, $r_{\text{effect size}} = .16$, though Japanese participants' continued to favor the bodies (M = .65, SD = .30) over the faces (M = .56, SD = .33), albeit only marginally, $t(31) = 1.76$, $p = .09$, $r_{\text{effect size}} = .30$.

Overall, our results indicate that Canadian perceivers tend to attend to the face whereas Japanese perceivers attend to the body when presented with emotional face-body composites. This varied somewhat according the body's emotion, however: When the body expressed anger or disgust, Canadian perceivers attended to the face and body equally. The angry and disgusted bodies therefore appear to have been more salient to Canadian perceivers than the fearful and sad bodies—perhaps because they appeared more threatening (similar to Kret et al.'s, 2013, findings). Thus, although we observed an overall pattern of Canadians paying greater attention to the face than the body and Japanese participants paying more attention to the body than the face, this may vary depending on the specific emotion expressed.

Study 1B: Supplementary Analyses

As in Study 1A, we calculated the proportion of participants' judgments that corresponded to the face's emotion and to the body's emotion in each composite, submitting these proportions of correct responses to a 2 (Culture: European-Canadian, Japanese) × 2 (Reference Point: face, body) × 2 (Alignment: aligned, misaligned) × 2 (Face Emotion: disgust, sadness) × 4 (Body Emotion: anger, disgust, fear, sadness) ANOVA with repeated measures on

the latter four factors. This revealed main effects of Culture, Reference Point, and Body Emotion, qualified by a series of interactions (see Table S4). As above, we focus on the three-way interactions relevant to our hypothesis.

In addition to the Culture × Reference point interaction discussed in the main text, we observed a Culture × Reference Point × Body Emotion interaction, $F(3, 186) = 15.63$, $p < .001$, $r_{\text{effect size}} = .45$. Further analysis revealed a significant Culture × Reference interaction when the body expressed disgust, $F(1, 62) = 41.26$, $p < .001$, $r_{\text{effect size}} = .63$, anger, $F(1, 62) = 26.86$, $p < .001$, $r_{\text{effect size}} = .55$, and fear, $F(1, 62) = 38.04$, $p < .001$, $r_{\text{effect size}} = .62$, but only a marginal interaction when the body expressed sadness, $F(1, 62) = 3.50$, $p = .07$, $r_{\text{effect size}} = .23$. Decomposing these interactions, we found that Canadian participants showed no significant preference for the face or body whereas Japanese participants' responses favored the emotion expressed by the body (see Table S5).

A Culture × Reference Point × Face Emotion interaction also emerged, $F(1, 62) = 19.76$, $p < .001$, $r_{\text{effect size}} = .49$. Decomposition showed a significant Culture × Reference Point interaction for composites with disgusted faces, $F(1, 63) = 21.92$, $p < .001$, $r_{\text{effect size}} = .51$, and sad faces, $F(1, 63) = 7.59$, $p = .007$, $r_{\text{effect size}} = .33$. Further comparisons for the disgusted face composites showed that there was no difference in accuracy corresponding to the face ($M = .43$, $SD = .31$) and body ($M = .48$, $SD = .28$) among Canadian perceivers, $t(31) = 1.09$, $p = .28$, $r_{\text{effect size}} = .19$, whereas Japanese perceivers' correct responses corresponded significantly more to the body ($M = .66$, $SD = .27$) than to the face ($M = .39$, $SD = .36$), $t(31) = 6.45$, $p < .001$, $r_{\text{effect size}} = .76$. For composites with sad faces, Japanese perceivers again showed greater attention to the body ($M = .67$, $SD = .26$) than to the face ($M = .33$, $SD = .31$), $t(31) = 8.68$, $p < .001$, $r_{\text{effect size}} =$

.84, and Canadian perceivers showed the expected opposite pattern, favoring the faces (M = .56, SD = .24) over the bodies (M = .44, SD = .29), $t(31) = 2.79$, $p = .009$, $r_{\text{effect size}} = .45$.

These results largely replicated those of Study 1A: Overall, Japanese participants expressed a robust tendency to focus on the body whereas Canadian participants showed a more variable tendency to preferentially attend to the face.

Table S1

Mean Proportion of Correct Emotion Recognition Judgments as Defined by the Face and Body Expressions in Studies 1A and 1B

	Study 1A		Study 1B	
	Judgment matches face emotion	Judgment matches body emotion	Judgment matches face emotion	Judgment matches body emotion
Canadian participants				
Disgusted Face				
Angry body	.17 (.20)	.77 (.22)	.25 (.24)	.46 (.20)
Disgusted body	.78 (.21)	.78 (.21)	.80 (.18)	.81 (.18)
Fearful body	.44 (.26)	.16 (.22)	.33 (.24)	.33 (.24)
Sad body	.43 (.25)	.15 (.19)	.33 (.22)	.32 (.19)
Sad Face				
Angry body	.65 (.21)	.12 (.20)	.60 (.18)	.25 (.18)
Disgusted body	.48 (.28)	.38 (.36)	.43 (.25)	.38 (.31)
Fearful body	.47 (.26)	.48 (.28)	.46 (.21)	.37 (.24)
Sad body	.86 (.13)	.86 (.13)	.74 (.15)	.74 (.15)

Japanese participants				
Disgusted Face				
Angry body	.06 (.10)	.88 (.14)	.15 (.17)	.65 (.22)
Disgusted body	.73 (.25)	.73 (.25)	.92 (.11)	.92 (.11)
Fearful body	.22 (.25)	.49 (.32)	.23 (.20)	.64 (.24)
Sad body	.18 (.19)	.28 (.16)	.25 (.22)	.43 (.23)
Sad Face				
Angry body	.49 (.28)	.36 (.25)	.35 (.23)	.51 (.26)
Disgusted body	.38 (.32)	.58 (.33)	.13 (.15)	.77 (.23)
Fearful body	.26 (.24)	.63 (.32)	.11 (.14)	.68 (.26)
Sad body	.88 (.16)	.88 (.16)	.72 (.23)	.72 (.23)

Note. Standard deviations in parentheses.

Table S2

Results of the Culture × Reference Point × Alignment × Face Emotion × Body Emotion ANOVA in Study 1A

	F	p	$r_{\text{effect size}}$
Culture	0.06	.81	.03
Reference point	5.23	.03	.27
Alignment	38.60	< .001	.61
Face emotion	70.48	< .001	.72
Body emotion	130.40	> .001	.82
Culture × Reference point	23.36	< .001	.51
Culture × Alignment	1.21	.27	.14
Culture × Face emotion	2.11	.15	.18
Culture × Body emotion	1.07	.36	.13
Reference point × Alignment	46.04	< .001	.64
Reference point × Face emotion	32.78	< .001	.58
Reference point × Body emotion	13.65	< .001	.42
Alignment × Face emotion	1.98	.16	.16
Alignment × Body emotion	2.35	.07	.19
Face emotion × Body emotion	569.15	< .001	.95
Culture × Reference point × Alignment	2.06	.16	.18
Culture × Reference point × Face emotion	0.16	.69	.05
Culture × Reference point × Body emotion	6.48	< .001	.30
Culture × Alignment × Face emotion	0.06	.81	.03

Culture × Alignment × Body emotion	1.57	.20	.15
Culture × Face emotion × Body emotion	6.75	< .001	.31
Reference point × Alignment × Face emotion	3.62	.06	.23
Reference point × Alignment × Body emotion	9.74	< .001	.36
Reference point × Face emotion × Body emotion	101.81	< .001	.78
Alignment × Face emotion × Body emotion	13.68	< .001	.42
Culture × Reference point × Alignment × Face emotion	0.10	.76	.04
Culture × Reference point × Alignment × Body emotion	1.64	.18	.16
Culture × Reference point × Face emotion × Body emotion	7.31	< .001	.32
Culture × Alignment × Face emotion × Body emotion	0.74	.53	.11
Reference point × Alignment × Face emotion × Body emotion	3.66	.01	.23
Culture × Reference point × Alignment × Face emotion × Body emotion	8.41	< .001	.34

Table S3

Culture × Reference Point Interactions for Each Body Emotion in Study 1A

	F	p	$r_{\text{effect size}}$
Angry body	19.39	< .001	.49
Disgusted body	3.78	.06	.24
Fearful body	21.12	< .001	.50
Sad body	24.32	< .001	.53

Table S4

Results of the Culture × Reference Point × Alignment × Face Emotion × Body Emotion ANOVA in Study 1B

	F	p	$r_{\text{effect size}}$
Culture	6.54	.01	.31
Reference point	25.38	< .001	.54
Alignment	3.35	.07	.23
Face emotion	0.96	.33	.12
Body emotion	210.86	< .001	.88
Culture × Reference point	39.01	< .001	.62
Culture × Alignment	1.81	.18	.17
Culture × Face emotion	12.05	< .001	.40
Culture × Body emotion	4.70	.003	.27
Reference point × Alignment	26.40	< .001	.55
Reference point × Face emotion	3.13	.08	.22
Reference point × Body emotion	10.50	< .001	.38
Alignment × Face emotion	1.24	.27	.14
Alignment × Body emotion	2.05	.11	.18
Face emotion × Body emotion	548.25	< .001	.95
Culture × Reference point × Alignment	1.12	.29	.13
Culture × Reference point × Face emotion	19.76	< .001	.49
Culture × Reference point × Body emotion	15.63	< .001	.45
Culture × Alignment × Face emotion	3.13	.08	.22

Culture × Alignment × Body emotion	0.75	.52	.11
Culture × Face emotion × Body emotion	1.71	.17	.17
Reference point × Alignment × Face emotion	5.43	.02	.28
Reference point × Alignment × Body emotion	6.49	< .001	.31
Reference point × Face emotion × Body emotion	45.96	< .001	.62
Alignment × Face emotion × Body emotion	1.05	.37	.13
Culture × Reference point × Alignment × Face emotion	0.24	.63	.06
Culture × Reference point × Alignment × Body emotion	1.70	.17	.17
Culture × Reference point × Face emotion × Body emotion	14.88	< .001	.44
Culture × Alignment × Face emotion × Body emotion	2.87	.04	.21
Reference point × Alignment × Face emotion × Body emotion	4.63	.004	.26
Culture × Reference point × Alignment × Face emotion × Body emotion	2.78	.04	.21

Table S5

Decomposition of Culture × Reference Point Interactions for Each Body Emotion in Study 1B

	t	*p*	$r_{\text{effect size}}$
Canadian perceivers			
Angry body	1.43	.16	.25
Disgusted body	0.45	.66	.08
Fearful body	0.62	.54	.11
Sad body	0.07	.94	.01
Japanese perceivers			
Angry body	5.56	< .001	.71
Disgusted body	11.54	< .001	.90
Fearful body	8.21	< .001	.83
Sad body	1.51	.02	.26

Table S6

Mean Proportion of Correct Emotion Recognition Judgments When Focusing on the Face and Body in Study 2

	Face focus condition	Body focus condition
Canadian participants		
Disgusted Face		
Angry body	.27 (.18)	.91 (.15)
Disgusted body	.66 (.20)	.92 (.19)
Fearful body	.46 (.21)	.83 (.28)
Sad body	.40 (.20)	.82 (.26)
Sad Face		
Angry body	.63 (.15)	.83 (.29)
Disgusted body	.54 (.23)	.89 (.24)
Fearful body	.52 (.20)	.87 (.21)
Sad body	.77 (.16)	.94 (.12)
Japanese participants		
Disgusted Face		
Angry body	.09 (.11)	.91 (.12)
Disgusted body	.62 (.28)	.85 (.22)
Fearful body	.19 (.19)	.71 (.31)
Sad body	.15 (.16)	.56 (.33)
Sad Face		
Angry body	.52 (.26)	.61 (.36)

Disgusted body	.40 (.31)	.81 (.28)
Fearful body	.33 (.26)	.81 (.23)
Sad body	.85 (.15)	.91 (.12)

Note. Standard deviations in parentheses.

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